Preface

Chemistry today is dynamic in scope and chemists find themselves working in areas currently described as interfaces like structural biology or biophysical chemistry. These interfaces progressively get absorbed and become integral parts of chemistry. The emergence of physical organic chemistry as a discipline is an acknowledgement of the need to interpret the behaviour of organic compounds in terms of their physico-chemical properties.

In this thesis, a fundamental understanding of physico-chemical properties important to medicinal chemists, working in the field of drug design, is discussed. Drug design is an integrated developing discipline which pretends an era of 'tailored drug'. It involves the study of effects of biologically active compounds on the basis of molecular interactions.

The increasing interest in hydroxamic acids has been attributed in part to various analytical applications and in biochemical and medicinal studies. However, while these applications are known, the basic propensities are not fully understood. I believe that an introductory Chapter I, will be a stimulus in understanding the scientific causes of many familiar phenomena, and thus gives an insight into their potentialities, which are as yet unexplored.

Due to the usefulness of density data in the calculation of various other parameters, a separate Chapter II, on density and its related parameters has been created. The phenomena occurring at the interface make immense contributions to our present day affluence. To understand the basic principles involved, surface chemistry has been treated in Chapter III. The next chapter covers the optical parameters of hydroxamic acids. The volumetric behaviour of

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hydroxamic acids have been studied in terms of viscometric parameters in Chapter V. These parameters provide information about the structure and molecular interactions of hydroxamic acids in solutions. Moreover, these parameters are also involved in the process of drug design. In recognition of the vital importance of the hydrogen-bond parameters in drug design, Chapter VI has been greatly strengthened. A short section on molecular properties calculated by software is presented in Chapter VIA.

The matter has been lucidly presented, orderly arranged and profusely illustrated. Experimental procedures are described in considerable detail. Emphasis is given to the procedures for each experiment. Some illustrations have been adopted from standard texts, journals and research papers. The sources of all such figures have been duly acknowledged. References have been included as appendices at the end of the chapters in order to guide the reader to the classical and current literature. These may, however, prove useful to the reader. The end part of this endeavour covers the author's published and presented work.

"Writing is an exploration. You start from nothing and learn as you go."

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